AMENDMENTS

In the Claims

1	1.(currently amended) A composition comprising a polymerizing agent including at least one		
2	molecular and/or atomic tag covalently bonded to a site on the polymerizing agent, where a		
3	fluorescence property of the tags undergoes a change before, during and/or after each of a sequence		
4	of monomer incorporations, where the tags remains covalently bonded to the polymerizing agent		
5	$\underline{\text{during the sequence of monomer incorporations}} \text{ and where the changes in the fluorescent} \underline{\text{ce}} \text{ property}$		
6	generate data evidencing each monomer incorporation producing a monomer incorporation read out.		
1	2.(previously amended) The composition of claim 1, wherein the fluorescence property has		
2	a first value when the polymerizing agent is in a first state and a second value when the		
3	polymerizing agent is in a second state, and where the polymerizing agent changes from the first		
4	state to the second state and back again during each monomer incorporation.		
1	3.(original) The composition of claim 2, wherein the polymerizing agent is a polymerase or		
2	reverse transcriptase.		
1	4.(original) The composition of claim 3, wherein the polymerase is selected from the group		
2	consisting of <i>Taq</i> DNA polymerase I, T7 DNA polymerase, Sequenase, and the Klenow fragment		
3	from E. coli DNA polymerase I.		
1	5.(original) The composition of claim 3, wherein the reverse transcriptase comprises HIV-1		
2	reverse transcriptase.		
1	6.(previously amended) The composition of claim 3, wherein the polymerase comprises Taq		
2	DNA polymerase I having a tag covalently bonded to an amino acid site of the <i>Taq</i> polymerase		
3	selected from the group consisting of 513-518, 643, 647, 649 and 653-661 and, where the tag		
4	comprises a fluorescent molecule.		
1	7.(currently amended) A composition comprising a polymerase or reverse transcriptase		
2	including at least one molecular and/or atomic tag covalently bonded to a site on the polymerase or		
3	reverse transcriptase, where a d fluorescence property of the tags has a first value when the		

reverse transcriptase is in a second state, and where the polymerase or reverse transcriptase changes from the first state to the second state and back again during each of a sequence of monomer incorporations, where the tags remains covalently bonded to the polymerizing agent during the sequence of monomer incorporations and where the changes in the detectable property generate data evidencing each monomer incorporation producing a monomer incorporation read out.	polymerase or reverse transcriptase is in a first state and a second value when the polymerase or
incorporations, where the tags remains covalently bonded to the polymerizing agent during the sequence of monomer incorporations and where the changes in the detectable property generate data	reverse transcriptase is in a second state, and where the polymerase or reverse transcriptase changes
sequence of monomer incorporations and where the changes in the detectable property generate data	from the first state to the second state and back again during each of a sequence of monomer
	incorporations, where the tags remains covalently bonded to the polymerizing agent during the
evidencing each monomer incorporation producing a monomer incorporation read out.	sequence of monomer incorporations and where the changes in the detectable property generate data
	evidencing each monomer incorporation producing a monomer incorporation read out.

- 8.(original) The composition of claim 7, wherein the polymerase is selected from the group consisting of *Taq* DNA polymerase I, T7 DNA polymerase, Sequenase, and the Klenow fragment from *E. coli* DNA polymerase I.
- 9.(original) The composition of claim 7, wherein the reverse transcriptase comprises HIV-1 reverse transcriptase.
 - 10.(allowed, previously amended) A composition comprising a polymerizing agent including a molecular and/or atomic tag covalently bonded to a site on the polymerizing agent and a monomer including a molecular and/or atomic tag, where at least one of the tags has a fluorescence property that undergoes a change before, during and/or after each of a sequence of monomer incorporations due to an interaction between the polymerizing agent tag and the monomer tag and where the changes in the detectable property generate data evidencing each monomer incorporation producing a monomer sequence read out.
 - 11.(allowed, previously amended) The composition of claim 10, wherein the change in the fluorescence property results from a change in the conformation of the polymerizing agent from a first conformational state to a second conformational state and back again during each monomer incorporation.
 - 12.(allowed, previously amended) The composition of claim 10, wherein the fluorescence property has a first detection propensity when the polymerizing agent is in the first conformational state and a second detection propensity when the polymerizing agent is in the a second conformational state.

1	13.(allowed, original)	The composition of claim 12, wherein the polymerizing agent is a		
2	polymerase or reverse transcriptase.			
1	14.(allowed, original)	The composition of claim 13, wherein the polymerase is selected from		
2	the group consisting of Taq DNA polymerase I, T7 DNA polymerase, Sequenase, and the Klenov			
3	fragment from E. coli DNA polymerase I.			
1	15.(allowed, original)	The composition of claim 13, wherein the reverse transcriptase		
2	comprises HIV-1 reverse transcriptase.			
1	16.(allowed, previously amended) The composition of claim 12, wherein each of the monomers			
2	comprises a deoxynucleotide triphosphate (dNTP) and the monomer tag is covalently bonded to the			
3	β or γ phosphate group of each dNTP.			
1	17.(allowed, previously an	nended) The composition of claim 10, wherein the tags comprise		
2	fluorescent tags and the fluorescence property comprises an intensity and/or frequency of emitted			
3	fluorescent light.			
1	18.(currently amended)	The composition of claim 17, wherein the fluorescentce property is		
2	fluorescence resonance ener	rgy transfer (FRET) where either the monomer tag or the polymerase tag		
3	comprises a donor and the	comprises a donor and the other tag comprises an acceptor and where FRET occurs when the two		
4	tags are in close proximity.			
5	19.(currently amended)	The composition of claim 14, wherein the polymerase comprises Taq		
6	DNA polymerase I having	a tag attached at a site selected from the group consisting of 513-518,		
7	643, 647, 649 and 653-661 and mixtures or combinations thereof of the Taq polymerase, where the			
8	tag comprises a fluorescent	molecule.		
1	20.(currently amended)	A composition comprising a polymerase or reverse transcriptase		
2	including a pair of tags co	ovalently bonded to two different sites of the polymerase or reverse		
3	transcriptase, where a fluor	transcriptase, where a fluorescence property of at least one of the tags undergoes a change before,		
4	during and/or after each of a sequence of monomer incorporations, where the tags remain covalently			

5 bonded to the polymerizing agent during the sequence of monomer incorporations and where the 6 changes in the fluorescent property generate data evidencing each monomer incorporation producing 7 a monomer sequence read out. 1 The composition of claim 20, wherein the fluorescence property has 21.(currently amended) 2 a first value when the polymerase is in a first state and a second value when the polymerase is in a 3 second state, and where the polymerase or reverse transcriptase changes from the first state to the 4 second state and back again during each monomer incorporation. 1 22.(original) The composition of claim 21, wherein the polymerase is selected from the group 2 consisting of Taq DNA polymerase I, T7 DNA polymerase, Sequenase, and the Klenow fragment 3 from E. coli DNA polymerase I. 1 23.(original) The composition of claim 21, wherein the reverse transcriptase comprises HIV-1 2 reverse transcriptase. 1 The composition of claim 22, wherein the polymerase comprises Taq 24.(currently amended) 2 DNA polymerase I has at least one tag attached at an amino acid site of the Taq DNA polymerase 3 I selected from the group consisting of 513-518, 643, 647, 649 and 653-661, and where one tag is 4 a donor fluorescent tag and the other tag is an acceptor fluorescent tag. 25.(withdrawn) 26.(withdrawn) 27.(withdrawn) 28.(withdrawn) 29.(withdrawn)

30.(withdrawn)

31.(withdrawn)

32.(withdrawn)

33.(withdrawn)

34.(withdrawn)

1	35.(currently amended)	A composition comprising a polymerizing agent including a		
2	fluorescent donor molecul	ar tag covalently bonded to a site on the polymerizing agent and a		
3	plurality of deoxynucleotic	plurality of deoxynucleotide triphosphate (dNTP), each dNTP including a fluorescent acceptor		
4	molecular tag covalently bo	molecular tag covalently bonded to a γ -phosphate of the dNTP, where the fluorescent donor tag and		
5	each acceptor tag of an inco	rporating dNTP interact in the presence of an excitation light generating		
6	a fluorescence resonance er	a fluorescence resonance energy transfer (FRET) response and where the FRET response produces		
7	a read out of each dNTP inc	corporation.		
1	36.(previously added)	The composition of claim 35, wherein each acceptor tag is different		
2	generating a different FRET response and producing a dNTP sequence read out.			
1	37.(previously added)	The composition of claim 35, wherein the polymerizing agent is a		
2	polymerase or reverse trans	criptase.		
1	38.(previously added)	The composition of claim 35, wherein the polymerase is selected from		
2	the group consisting of Taq DNA polymerase I, T7 DNA polymerase, Sequenase, and the Klenow			
3	fragment from E. coli DNA	polymerase I.		
1	39.(previously added)	The composition of claim 37, wherein the reverse transcriptase		
2	comprises HIV-1 reverse transcriptase.			
1	40.(previously added)	The composition of claim 36, wherein the dNTPs comprise dATP,		
2	dTTP, dCTP and dGTP.			
1	41.(previously added)	The composition of claim 36, wherein the dNTPs comprise dATP,		
2	dUTP, dCTP and dGTP.			
3	42.(currently added) The	42.(currently added) The composition of claim 40, wherein the polymerase comprises <i>Taq</i> DNA		
4	polymerase I having a tag at	polymerase I having a tag attached at a site selected from the group consisting of 513-518, 643, 647,		
5	649 and 653-661 and mix	649 and 653-661 and mixtures or combinations thereof of the Taq polymerase, where the tag		

comprises a fluorescent molecule.

6

1	43.(previously added)	The composition of claim $6 \underline{47}$, wherein the amino acid site of the Taq				
2	DNA polymerase I represents a cysteine amino acid substitution and the tag is covalently bonded					
3	to the SH moiety of the cyst	to the SH moiety of the cysteine amino acid substitution.				
1	44.(previously added)	The composition of claim 19, wherein the amino acid site of the Taq				
2	DNA polymerase I represents a cysteine amino acid substitution and the tag is covalently bonded					
3	to the SH moiety of the cysteine amino acid substitution.					
1	45.(previously added)	The composition of claim 24, wherein the amino acid site of the <i>Tag</i>				
2	• •	DNA polymerase I represents a cysteine amino acid substitution and the tag is covalently bonded				
3	to the SH moiety of the cyst	eine amino acid substitution.				
1	46.(previously added)	The composition of claim 42, wherein the amino acid site of the Taq				
2	DNA polymerase I represen	DNA polymerase I represents a cysteine amino acid substitution and the tag is covalently bonded				
3	to the SH moiety of the cysteine amino acid substitution.					
1	47.(new) A composition	on comprising <i>Taq</i> DNA polymerase I including a tag covalently bonded				
2	to an amino acid site of the <i>Taq</i> polymerase selected from the group consisting of 513-518, 643, 647,					
3		649 and 653-661, where the tag comprises a fluorescent molecule where a fluorescence property of				
4	the tag undergoes a change before, during and/or after each of a sequence of monomer					
5	incorporations and where the changes in the fluorescent property generate data evidencing each					

monomer incorporation producing a monomer incorporation read out.

6